

New IR Imaging System on Alcator C-MOD

LANL/C-MOD collaboration

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- **Issues**

- * Measure heat loads on divertor surfaces
- * Search for hot spots, possible sources of molybdenum

- **Approach: IR imaging**

- * IR periscope in Section A
- * View from top down
- * Mid IR range: 3-5 mm
- * Standard video or 12-bit digital acquisition

- **Outline**

1. Brief description of IR system and capabilities
2. Other aspects of LANL/C-MOD collaboration:
Kodak visible fast framing camera
3. Summary and conclusions

Periscope layout (45 deg. position)



Amber Radiance 1 Infrared Camera



- Gated from $<10 \mu\text{s}$ to 16 ms.
- Full remote control through RS-232 link.
- Filter wheel with CO_2 narrowband or 10%, 1% , and 0.1 % neutral density.
- NTSC, S-Video or digital output.

Observations with Kodak visible fast framing camera in TFTR

Clips can be seen through the WWW at:
<http://wsx.lanl.gov/ricky/disrupt.htm>

- Moving, coherent, light emission filaments observed on the inner wall armor during current ramp-up that are associated to rational q-surfaces.
- Lithium pellet material recycling into the chamber walls (Li^+ filter).
- “Locked-modes” and “MARFEs”.
- Disruption precursor activity on the edge.
- Post-disruption phenomena such as localized toroidal structures, flying debris and wall radiation produced by runaways.

Summary

- A new IR imaging system will be operational at C-MOD during the 1997 campaign.
- This periscope/camera system is able to image the divertor and in this way study heat loads at different operating conditions (attached-detached plasmas) and during disruptions.
- The system can be used to image the ICRF antenna (with the correct line of sight).
- LANL personnel will participate of the 1997 campaign, coordinating the results from the IR and visible cameras with other diagnostics and overall plasma operations.